



A health study for oil spill clean-up workers and volunteers

Study Summary

The Gulf Long-term Follow-up (GuLF) Study will investigate potential short- and long-term health effects associated with clean-up activities following the Deepwater Horizon disaster in the Gulf of Mexico on April 20, 2010. Crude oil, burning oil, and the dispersants used during clean-up efforts contain a range of known and suspected toxins. Over 130,000 persons have completed safety training in preparation for participation in clean-up activities related to the spill or were deployed to the Gulf as part of the Federal military and civilian response to the spill. While many of these participated in active clean-up efforts, others did not. Exposures among persons involved in clean-up range from negligible to potentially significant, especially for workers involved in tasks associated with direct exposure to crude or burning oil, or to chemical dispersants. However, prediction of adverse health effects is not possible because the long-term human health consequences of oil spills are largely unknown due to the dearth of research in this area. The potential health effects associated with the levels of exposure experienced by clean-up workers are largely unstudied. Heat and stress experienced by these workers may also have adverse long-term health effects. In addition to the oil itself, the widespread economic and lifestyle disruption caused by the oil spill may contribute to mental health problems among subsets of this population.

The over-arching hypotheses of this study are:

1. Exposure to constituents of oil, dispersants, and oil-dispersant mixtures, and to spill-related stress by workers engaged in clean-up of the Deepwater Horizon oil spill are associated with adverse health effects, particularly **respiratory, neurological, hematologic, and psychological or mental health**.
2. There are exposure-response relationships between the above exposures and health effects.
3. Biomarkers of potentially adverse biologic effects are associated with the above exposures.

Based on what is known about individuals involved in clean-up efforts, the cohort will consist primarily of English-, Spanish-, or Vietnamese-speaking adults who performed oil-spill clean-up-related work ("exposed") and similar persons who did not engage in clean-up-related work ("unexposed" controls). Accommodations for enrolling participants speaking other languages will be developed through community collaborations as appropriate. Workers will be sampled from across job/potential exposure groups. A total of approximately 55,000 persons are expected to be enrolled into the cohort. A random sample of the full cohort, stratified by category of job/potential exposure (including N~6,000 with no oil-spill work to serve as controls) and oversampled for workers with higher potential exposures, will be enrolled into an *Active Follow-up Sub-cohort* (N~24,000). A random sample of the Active Follow-up Sub-cohort, also stratified by category of job/potential exposure and oversampled for workers with higher

potential exposures, will be enrolled into a *Biomedical Surveillance Sub-cohort* (N~5,000). Participants will be interviewed about their clean-up-related tasks, demographic and socioeconomic factors, occupational and health histories, psychosocial factors, and physical and mental health. Members of the Active Follow-up Sub-cohort will also be asked to provide biological samples (blood, urine, hair, toe nail clippings, and possibly saliva) and environmental samples (house dust) and will have basic clinical measurements (height, weight, waist and hip circumference, blood pressure, urinary glucose levels, FEV1 and FVC as a measure of pulmonary function) taken during home visits at baseline. The Biomedical Surveillance Sub-cohort will participate in a more comprehensive clinical assessment after the initial home visit, including more comprehensive pulmonary function testing, neurological testing, and collection of additional biological and environmental samples. The specific tests to be performed and clinical protocols will be developed in collaboration with extramural investigators selected through a request for proposals (RFP).

Exposures will be estimated using detailed job-exposure matrices developed from data from monitoring performed by different agencies and organizations during the crisis, as well as information on recommended or actual use of personal protection, information obtained by interview, and the available scientific literature. It should be noted that, in the absence of individual or group monitoring data for most workers, estimates of exposure, whether based on job activities or on more refined job-exposure matrices, will indicate the degree of *potential* exposure (i.e., exposure opportunity) rather than *known* exposure. We will investigate acute health effects via self-report from the enrollment interview among all cohort members and also via clinical measures and biological samples from Active Follow-up Sub-cohort members. All cohort members will be followed for development of a range of health outcomes through record linkage (cancer, mortality) and if feasible, through linkage with electronic medical records that may become available during the course of follow-up. Health outcomes among the Active Follow-up Sub-cohort will also be identified through self-report via periodic follow-up interviews. Additional outcome information will be obtained on the Biomedical Surveillance Sub-cohort from periodic follow-up clinical evaluations (e.g., spirometry, neurological testing) and analysis of follow-up biospecimens (e.g., immunologic parameters, liver function, renal function, DNA damage). Follow-up of the entire cohort is initially planned for 10 years, with extended follow-up possible depending upon scientific and public health needs and the availability of funds.

Recruitment of subjects should begin in January or February 2011, with the telephone interviews expected to be completed within 9-12 months and the baseline home visits within 18 months. We will initially target workers residing in the four most affected Gulf States (LA, MS, AL, and FL) for inclusion in the Active Follow-up Subcohort, although we may expand to other states if further information about the geographic distribution of workers and their potential exposures warrants additional follow-up in these states. We will work closely with a Community Advisory Board to develop community support for this study and appropriate communications and study materials.

For more information

Call the study center toll free at 1-855-NIH-GULF (1-855-644-4853)